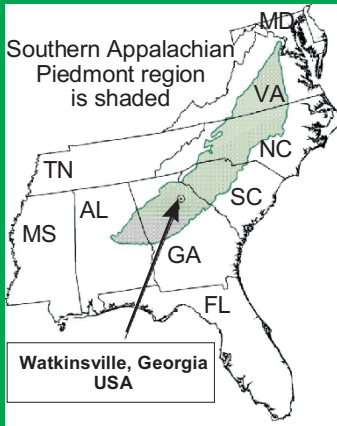




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National Program

JPC Research Note - 03

Bermudagrass Management

Nitrogen in Surface Soil

Why does it matter?

Nitrogen (N) fertilization of pastures greatly improves productivity, but is expensive. Incorporation of N into soil organic matter early in pasture development can lead to improved long-term soil fertility and reduced requirement for N fertilizer later on.



What was done?

Soil was sampled yearly from 'Coastal' bermudagrass pastures managed in 4 different ways following cropland, representing a gradient in:

forage utilization	↑ ↓	high	hayed monthly
		low	high grazing pressure low grazing pressure unharvested

What was found?

At the end of 5 years, the majority of N applied in fertilizer was stored in soil organic matter with cattle grazing systems, but removed in biomass with haying.

Fertilization with 240 lb N/acre/year led to the following changes in surface residue N, total soil N, and harvested N components during 5 years. (Values in % are of total applied N in 5 years)

Management	Surface Residue (lb/a)	(%)	Soil (0-8") (lb/a)	(%)	Harvested (lb/a)	(%)
Hayed	36	3	395	33	680	57
High grazing pressure	74	6	1020	85	40	3
Low grazing pressure	95	8	1038	87	34	3
Unharvested	119	10	654	55	0	0

A full description of this research can be found in the article:

Franzluebbbers AJ, Stuedemann JA, 2001.
Bermudagrass management in the Southern Piedmont USA. IV. Soil-surface nitrogen pools. The Scientific World 1: 673-681.

What's the impact?

Nitrogen applied with fertilizer in grazed pastures not only feeds forage, but also the accumulation of soil organic matter.